

ABSTRACT

The present invention generally relates to stable emissive aggregates of polymers. The aggregates are composed of various polymer molecules arranged in such a way as to allow extended electronic couplings between nearby polymer molecules, enhancing exciton transport, while minimizing the effects of quenching due to interchain interactions. For example, the polymer molecules may be arranged in a non-aligned, electronically-communicative manner (for example, at an oblique angle), stabilized by various methods such as chemical linkages or physical interactions. Within the aggregate, electronic interactions along the polymer molecule may extend to nearby polymer molecules, which may be observed as a shift in the absorption spectra relative to a random dispersion. Light emitted from the aggregate may be polarized in some cases, for example, linearly or circularly, which may be caused by chiral arrangements of polymers within the aggregate (the polymers themselves may or may not be chiral). These aggregates may find widespread use, for example, in enantiomeric detectors, electrochemical devices, photodetectors, organic diodes, sensors, light sources, or photovoltaic devices.